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THE SKULL.

BY

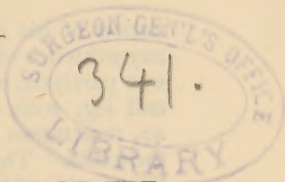
H. O. WALKER, M.D.,
DETROIT, MICH.

FROM THE
MEDICAL AND SURGICAL REPORTER,
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REPORT OF FOUR CASES OF TREPHINING THE SKULL.¹

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Trephining for Intra-cranial Hæmatoma, with Hemiplegia; Recovery.

Case I.—Joe S., Pole, aged 35 years, was brought to St. Mary's Hospital, February 11, 1887, by the patrol wagon, having been picked up the night previous by the police and put in the station, being registered as a common drunkard. I did not see him until the next day, when the house surgeon reported the case to me. Since his entrance to the hospital he had slept most of the time, and it was with some difficulty that he could be aroused. The only information that we could get from him was that he had pain in the left shoulder. We were completely in the dark as to his history. A careful exami-

¹ Read, and patients exhibited, before the Detroit Medical and Library Association, April 16, 1888.

nation of his entire body failed to give us any evidence of the slightest injury. There was paralysis, not complete, of the left arm and leg, with incontinence of urine, pulse 40, respiration 12, and temperature 98° in the axilla. The pupils responded to light. When aroused, he swallowed whatever liquid was given him. I directed full doses of bromide of potassium and a copious enema.

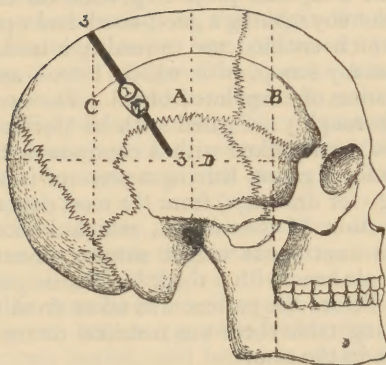
February 13. His condition remained unchanged; the bowels had not moved.

February 14. Condition the same, with the exception that the paralysis was becoming more complete and it was more difficult to rouse him. I ordered drop doses of ol. tigllii until an action of bowels occurred. Three drops were given without avail.

February 15. No improvement. My colleagues, Drs. T. A. McGran and H. T. Lyster, agreed with me that my patient was suffering from compression of the brain, evidently due to a blood clot, and agreed with me as to the importance of trephining. I directed the head to be thoroughly shaved, and washed with mercuric bichloride (1 to 500) and afterwards encased in a cap of several thicknesses of bichloride gauze, to be left on until the next day, the time designated for the operation.

February 16. In the presence of the class of the Detroit College of Medicine I operated. Before operating, however, I mapped out the head with aniline ink, first drawing A, (Fig. 1) auriculo-bregmatic line, and at right angles with this line, D, the fronto-

FIG. I.



lambdoidal line; then measuring posteriorly two inches and drawing another line parallel with A would give a space in which is found the fissure of Rolando 3-3. Our patient at this time was in a deep stupor, no stertor, complete paralysis of left arm and leg, pulse 38, and temperature normal. The pupils responded feebly to light. The point determined upon for trephining was midway over the right fissure of Rolando, the supposed motor area of the arm, 3-3; after producing anæsthesia with chloroform, a free crucial incision was made through the scalp and similarly through the periosteum, reflecting it back from the skull. On removing the first button of bone (2) a dark mass of coagulated blood protruded through the opening,

and in order to facilitate the better removal of coagula I removed another button (1) and chiseled away the projecting bone on each side, thereby making a good-sized oval opening, which enabled me to readily introduce a lithotomy scoop, with which I took away four ounces of coagulated blood. The cavity was thoroughly irrigated with bichloride (1 to 1000) and packed with a continuous strip of iodoform gauze, leaving a piece of it projecting (for drainage) from the most dependent portion of the wound, which I closed with a continuous catgut suture, covering the whole head with a thick bichloride gauze cap. Before the patient was taken from the operating table there was manifest return of motion in the arm.

February 17. Passed a comfortable night; pulse 80, temperature normal, with increased motion of arm and leg; could answer questions fairly well. The dressing was renewed, as there had been considerable oozing during the night.

February 18. There has been gradual improvement since yesterday, without rise of temperature. He informs me that on the day that he was taken to the police station, he and some other fellow-workmen jumped from a scaffold which was giving away, a distance of about ten feet. This occurred at 2 P. M. He continued to work until 5 P. M. without inconvenience. While going home he observed that he could not hold his dinner-pail in the left hand, and shortly after

this had no further recollection of anything until the morning following the operation.

February 19. I found him on entering the ward sitting on the edge of his bed; motion in the leg was increased, and his grip of the left hand upon mine was quite appreciable. Incontinence of urine had entirely disappeared. The dressing and iodoform gauze drain were removed, and the latter was replaced with several strands of catgut.

February 24. Patient walks about the ward; renewed the dressing, as there was still a slight oozing.

He continued to improve, and left the hospital March 15, 1887, with the wound entirely healed, and function of arm and leg fully restored, I have seen him several times since, and he is now as well as ever.

**Trephining for Extensive Fracture and
Depression; Hemiplegia; Aphasia;
Recovery.**

Case II.—Ambrose McNamara, aged 11 years, entered St. Mary's Hospital, Feb. 18, 1888, with the following history: On the afternoon of February 16; he fell from a building, a distance of twenty feet, striking upon his head. He was unconscious for about half an hour; during the night he vomited frequently small quantities of blood.

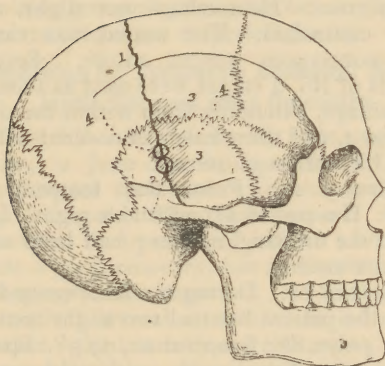
February 17. Was delirious at times, complaining of severe pain in his head, and during the night he lost the power of speech.

February 18. His symptoms growing worse, his physician, Dr. J. F. Encke, directed that he be sent to the hospital, where I first saw him. At this time there was hemispasm of the left arm, and turning of the eyes to the left. He would start suddenly when spoken to, and attempt to get out of bed. He had full control of his bladder, but had had no movement from the bowels since the accident. One drop of croton oil, however, acted quickly, producing free catharsis. The pulse was 80, and temperature 100.5° ; pupils contracted, but responded to light. The entire scalp was greatly swollen, and pitted on pressure. The point of greatest sensibility seemed to be just above the right ear, yet it was impossible to detect either fracture or depression of the skull. The head was shaved, washed and an antiseptic cap applied, together with an ice bag.

February 19. Passed a restless night, although full doses of bromide of potassium and chloral hydrate had been given. Hemispasm with hemiplegia of left arm and leg was now complete; pulse, 90; temperature, 102° ; vision incomplete, and complete aphasia.

At 4 P. M., assisted by Drs. J. F. Encke, W. E. Clark and several medical students, I made a curved incision, with concavity towards parietal eminence, as indicated in Fig. 2 by dotted line (4-4). I found, how-

FIG. 2.



ever, that to expose the depression (3-3) and extent of fracture, it was necessary to extend my incision downwards (5). Reflecting back the periosteum, it was discovered that the fracture extended vertically from just above the external meatus to the parietal eminence, and transversely through the whole width of the squamous portion of temporal bone (1-1-1). There was a marked depression (3-3) in front of the vertical fracture. Removing two half buttons (2) with the trephine, and chiseling off the projecting bone, I succeeded with the elevator in lifting up the area of depression. The dura mater was deeply injected, and under it could be seen considerable coagulum. This was removed by cutting through the dura

mater and irrigating with mercuric bichloride 1-1000. Hemorrhage was slight, and easily controlled. The wound was closed with continuous catgut suture. Several strands of No. 4 catgut were used as a means of drainage, extending from within the dura mater out, and the whole was covered with a thick bichloride gauze cap.

February 20. Pulse, 80; temperature, 99.8°. Has passed a comfortable night. I renewed the dressing, as there had been considerable oozing.

February 21. During the last twenty-four hours the patient has had two slight convulsions; pulse, 86; temperature, 99.5°. Spasm of the arm disappearing, with evidence of movement in the arm and leg.

February 23. Has been gaining gradually for the last two days; asks for a drink, and constantly (when not asleep) crying for something to eat.

February 27. Is able to sit up in bed; temperature normal. There is a marked improvement in speech and motion of the arm and leg.

March 2. Not so well. Temperature 99.5°. Eats and sleeps well, however. Ordered wound redressed.

March 6. After redressing of wound the temperature fell to normal, and has remained so ever since. He is now able to walk about the ward.

March 9. At the earnest solicitation of parents was allowed to go home. Wound

nearly healed. At the present writing, he has been going to school for two weeks, and appears before you in perfect health.

Trephining for Traumatic Epilepsy; No Epileptic Seizures since Operation.

Case III.—T. Byerenski, Pole, aged 32 years; in June of 1887 was struck on the left parietal eminence with the end of a wagon-tongue. The blow caused unconsciousness for upwards of half an hour. He made a good recovery, but in October had a fit lasting for ten minutes. Since that time he has had several attacks—over a dozen in number—the last one on February 14, 1888. These attacks as described by the patient and his friends, were without doubt epileptiform in character. He gave no history of epilepsy previous to the injury, hereditary or otherwise, and was always in good health.

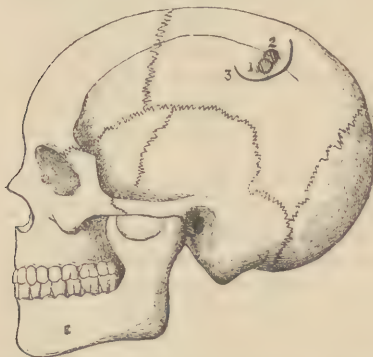
He entered St. Mary's Hospital, February 19, and was prepared for the operation as in the previous cases. At the seat of injury there was a circular depression three-quarters of an inch in diameter and one-fifth of an inch in depth.

February 22, made circular incision as indicated by line (3-3) Fig. 3, and reflected periosteum. First button (1) removed was directly over the centre of the depression; finding that there still existed above a portion of depressed bone, I removed a three-quarter inch disk of bone. The wound was drained and dressed as in the preceding case.

February 23. Dressing removed on account of oozing. Temperature normal.

The case progressed favorably, and the patient was discharged from the hospital, March

Fig. 3.



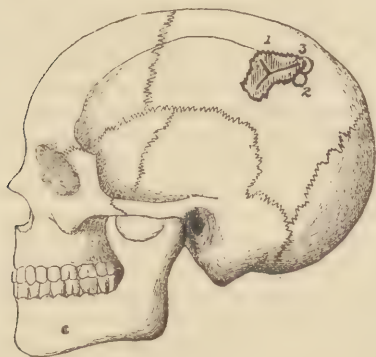
16, with the wound entirely healed. He is now back at his former work, and has not had the slightest symptoms of a convulsion since the operation.

Trephining for Compound and Depressed Fractures of Skull; Recovery.

Case IV.—J. Shemanski, aged 17, March 31, 1888, while attempting to steal a ride on a freight train, was thrown, and struck upon his head, rendering him insensible. He was picked up and taken to his home near by, when in about half an hour he recovered

consciousness. His physician, Dr. L. H. Johnson, on being called, summoned me, and I saw him about two hours after the accident. There was a circular-shaped scalp wound about three and a half inches in length, just above the left parietal eminence. Laying back the flap I discovered an irregular-shaped fracture two inches in length, and depressed fully half an inch (1, Fig. 4), so that I could easily put the ball of my thumb in the depression.

Fig. 4.



He had fully recovered from the concussion. Neither he nor his friends seemed to realize the seriousness of the case, and it was with considerable difficulty that I could get them to consent to operative interference. The head was shaved and prepared as in the

preceding cases. The opening through the scalp was sufficiently large to permit, after first reflecting the periosteum, of the removal of two half-disks (2-3), at the outer border of the depression, and several spicula of bone. With considerable effort the depressed bone was restored by means of the elevator to its normal position. The drainage and dressing was applied as heretofore described.

April 1. Temperature normal, and the dressings, thoroughly stained from the oozing, were removed and re-applied.

April 2. Found him, contrary to orders, sitting up; but without an unpleasant symptom.

April 16. To day the dressings were all removed, and the wound found entirely healed. In this case there was no manifestation of an untoward symptom after the first dressing.

I forgot to mention that an ice-bag was applied to the head in all these cases for several days, except in the last case. You will observe, by the several buttons of bone which I exhibit to you, that I neglected to replace them. In my next report of this class of cases if I should be so fortunate as to have any, I hope to be able to present the patients with their skulls intact, by the immediate re-implantation of the pieces of bone removed.

The importance of surgical interference in lesions of the brain is conceded by the representative surgeons of the world, and although I can add but little to surgical literature upon this subject, I feel that in pre-

senting these cases I have at least added a mite of evidence confirmatory of the good work that has been done in this direction during the last few years, and in reiterating the thoughts of others incite you to belief in, and further investigation of, this important subject.

Dr. John B. Roberts, of Philadelphia, in an admirable paper ¹ upon "Operative Surgery of the Human Brain," divides the lesions of the brain that we have to contend with as follows: "(a) Cranial fractures; (b) intracranial hemorrhage; (c) intracranial suppuration; (d) epilepsy following cranial injury; (e) insanity following cranial injury; (f) cerebral tumor. The cases that I have presented here to-night are illustrative of cranial fractures, simple and compound, with some of the concomitant symptoms—intracranial hemorrhage and epilepsy.

In case 1, in which a blood coagulum was removed, there was no history of traumatism until after the operation was performed, and we had to rely entirely upon objective symptoms as to the nature of the lesion, whether it might be hemorrhage, abscess, or tumor, while as to the site of lesion we were guided wholly by our present knowledge of cerebral topography, a partial diagram of which is exhibited in Fig. 1. The result certainly justified the means employed for relief.

Case 2 was also somewhat obscure, although we had the history of a fall, yet it

¹ Annals of Surgery, Vol. II, pages 1-110, 214.

could not be made out whether the symptoms of compression were due to fracture or hemorrhage, or both. Here again, we were largely guided by cerebral localization. I forgot to mention in the report of this case that the patient is left-handed, which will account for the aphasia, as aphasia in left-handed persons is due to the lesions upon right side of the brain.

Trephining for traumatic epilepsy has been robbed of its terrors since the introduction of antiseptic surgery, thereby justifying an operation when any depression of the skull can be traced as the direct cause of this terrible malady, for if relief or a cure is not effected the danger is *nil*.

Case 3, as has already been stated, has had no return of fits, yet the permanency of relief can only be determined by further time.

Case 4 was a typical one of compound fracture of the skull, and although no brain symptoms were present, and he would have probably got well under the strict maintenance of antisepsis, yet I felt justified in doing what was done, thereby preventing what occurred in case 3, although the depression in that case was considerably less than in case 4.

Abscess of the brain has been quite satisfactorily treated in the last few years by incision and drainage, a number of successful cases having been reported during the last year. A noteworthy case of removal of an intracranial tumor by Dr. Weir, and reports of similar cases by Horsley and others, are among the recent achievements of surgical art.

In conclusion, effective operations for the relief of brain lesions require: *First*, A thorough knowledge of cerebral localization, the details of which can be found in an article by Horsley entitled, "A note on the means of topographical diagnosis of focal diseases affecting the so-called motor region of the cerebral cortex." They may also be found in an article by Seguin, in Pepper's "System of Medicine," vol. v, p. 94. *Second*, A thorough knowledge and appreciation of antisepsis, together with efficient drainage.

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